

REMARKS

Status of the Claims

Claims 1-21 are pending, with claim 1 being independent. Initially, Applicants are pleased to note that claims 15, 16, 17, and 21 are indicated as containing allowable subject matter.

In order to expedite prosecution, claims 5 and 17 have been amended merely formally to insert proper Markush language. Therefore, no new matter has been added.

Applicants respectfully request the Examiner to reconsider and withdraw the outstanding rejections in view of the foregoing amendments and the following remarks.

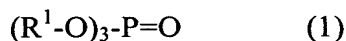
Claim Rejections Under 35 U.S.C. § 112, second paragraph

Claims 5 and 17 have been rejected under 35 U.S.C. § 112, second paragraph as being indefinite for recitation of improper Markush language. In order to expedite prosecution, claims 5 and 17 have been amended merely formally to insert proper Markush language. In view of the amended claims, Applicants respectfully submit that the rejection under 35 U.S.C. § 112, second paragraph has been obviated and request withdrawal thereof.

Claim Rejections In View Of Joye

Claims 1, 2, 4, 5, 9-14, and 20 are rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent No. 6,541,428 ("Joye"). Claims 1, 2, 4, 5, 9-14 and 20 also stand rejected under 35 U.S.C. § 103(a) as being allegedly obvious over Joye. Applicants respectfully disagree with these rejections; therefore, these rejections are respectfully traversed.

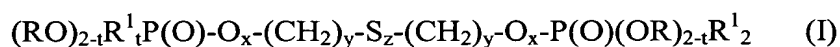
Joye discloses *compositions* comprising sulfurized orthophosphate compounds. More particularly, Joye's compositions comprise a mixture of sulphurized mono- and di-ester phosphates, in acid or salified form, and optionally tri-ester phosphates, wherein the mixture comprises at least one compound of formula (I) represented by:



wherein at least one of the R^1 radicals is $R^1-(O-X)_n$; R^1 can be $R^1-(O-X)_n$, a hydrogen atom, or a saturated or unsaturated, linear, branched or cyclic, hydrocarbonaceous radical comprising 1 to 30 carbon atoms; X is a linear or branched alkylene radical comprising 2 to 4

carbon atoms; and n has a mean value of between 1 and 100 and wherein at least one of the R¹ radicals of a molecule of the compound of formula (I) is connected to another R¹ radical of another molecule of the compound of formula (I) via one or more mono- or polysulphide bridges using S-C bonds. See Claim 1. Joye's compositions are prepared by a process involving phosphorylation of a mixture of ethoxylated fatty alcohols to obtain an alkoxylated alkyl orthophosphate composition and reacting such composition with sulfur to obtain a corresponding alkoxylated sulfurized orthophosphate composition. Col. 5, lines 38-col. 6, line 14.

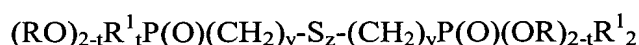
Applicants respectfully submit that Joye does not disclose or suggest the compound of formula (I) set forth in claim 1. Joye's compositions are *mixtures* of various sulfurized orthophosphoric esters. In contrast, the invention of claim 1 is a *compound* corresponding to the formula (I):



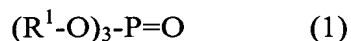
wherein R represents a hydrogen, an alkyl, an aryl, a trialkylsilyl, a trialkylamino or an alkali metal; R¹ represents an alkyl or an aryl; x is 0 or 1; y is an integer from 1 to 22; z ≥ 3; and t is 0 or 1. The claimed *compound* of formula (I) is a di-ester. As such, Applicants respectfully submit that the claimed compounds are significantly different than Joye's mixture of orthophosphoric mono-esters, di-esters, and/or tri-esters.

Applicants respectfully submit that Joye discloses a *mixture* of sulfurized orthophosphoric esters. As such, Joye discloses a genus including species of orthophosphoric esters. Accordingly, Joye does not anticipate the claimed compound of formula (I). "A generic claim cannot be allowed to an applicant if the prior art discloses a species falling within the claimed genus." *In re Slayter*, 276 F.2d 408, 411, 125 USPQ 345, 347 (CCPA 1960). Joye does not disclose any species/compound, but rather a genus/mixture. A reference disclosing a genus will anticipate a claimed species only when the species can be "at once envisaged" from the genus. M.P.E.P. § 2131.02, *In re Meyer*, 599 F.2d 1026, 202 USPQ 175 (CCPA 1979). Applicants respectfully submit that Joye's *mixtures* comprise *many* different sulfurized orthophosphoric esters, and there is no disclosure or suggestion of the present specifically claimed compounds.

Furthermore, Applicants respectfully submit that the claimed compound of formula (I), when $x=0$, does not correspond to Joye's compound of formula (1). When $x=0$, the claimed compound of formula (I) is represented by:



In contrast, Joye's compound of formula (1) is represented by:



wherein at least one of the R^1 radicals is $\text{R}^1\text{-(O-X)}_n$; R^1 can be $\text{R}^1\text{-(O-X)}_n$, a hydrogen atom, or a saturated or unsaturated, linear, branched or cyclic, hydrocarbonaceous radical comprising 1 to 30 carbon atoms; X is a linear or branched alkylene radical comprising 2 to 4 carbon atoms; and n has a mean value of between 1 and 100 and wherein at least one of the R^1 radicals of a molecule of the compound of formula (I) is connected to another R^1 radical of another molecule of the compound of formula (I) via one or more mono- or polysulphide bridges using S-C bonds. See Claim 1.

In the Office Action, the Examiner alleges that "[i]t would have obvious to one having ordinary skill in the art, at the time the invention was made, to select Na and K from a list of equivalents." Office Action at page 3. This rationale applies particularly to dependent claim 5. The Examiner did not provide any reason why one of ordinary skill in the art at the time the invention was made would have isolated or otherwise chosen the claimed di-ester **compound** of formula (I) from Joye's **mixture** sulphurized mono- or di-ester phosphates, and optionally sulphurized tri-ester phosphates.

A proper § 103 rejection requires some teaching, suggestion, or motivation to alter elements of the prior art in the prior art itself, the nature of the problem, or the knowledge of a person with ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007).

Applicants respectfully submit that one of ordinary skill in the art at the time the invention was made would not been motivated to make and isolate the claimed compound of formula (I) from Joye's composition. First, Joye does not simply combine the di-ester of formula (I) with other orthophosphoric esters. Rather, Joye's composition is produced by phosphorylation of a mixture of ethoxylated fatty alcohols to provide a mixture of orthophosphoric esters. Col. 5, lines 38-45. Thereafter, sulphur is added to the mixture to obtain a sulphurized orthophosphate composition comprising a mixture of orthophosphoric

esters. Col. 6, lines 4-35. Second, the claimed compound of formula (I) and Joye's compositions are directed to different technological fields. The claimed compound of formula (I) is useful as a coupling agent between a polymer matrix and an inorganic or metal filler and as an elastomer. See Abstract and page 2, line 39-page 3, line 4. In contrast, Joye's compositions are useful as multifunctional additives in lubricating or detergent aqueous formulations because they are water soluble or water dispersible without the addition of surfactants. See abstract and col. 1, lines 30-34. Finally, Joye gives no indication that only an orthophosphoric di-ester would exhibit the same properties as the composition or be advantageous over the composition.

Claim 20 is directed to a process for the preparation of a compound of formula (II) set forth in claim 7:



Claim 20 adds the limitation that R is H, y is an integer from 1 to 22, and $z \geq 3$. In the compound of formula (II), $x=0$.

Applicants respectfully submit that Joye does not disclose or suggest the process set forth in claim 20. As stated above, the claimed compound of formula (I), when $x=0$, does not correspond to Joye's compound of formula (1). Simply put, the process of claim 20 produces a compound which is not even present in Joye's composition. As a result, Joye cannot possibly disclose or suggest the process of claim 20.

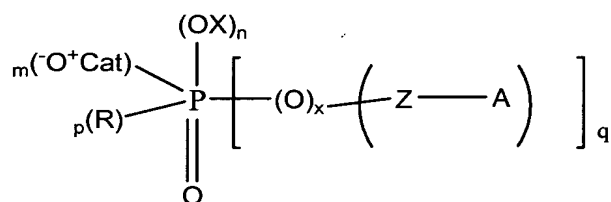
Applicants further respectfully submit that one of ordinary skill in the art at the time the invention was made would not have been motivated by Joye to prepare the compound of formula (II). Joye conducts phosphorylation of a *mixture* of ethoxylated fatty alcohols to prepare a *mixture* of mono- and di-esters, and optionally tri-esters. In contrast, claim 20 involves alcoholizing a *single* phosphate to prepare a *compound*. Joye does not provide any motivation to substitute a *single* reactant to produce a *compound* for a *mixture* of reactants to produce a *mixture* of products.

For at least the above reasons, Applicants respectfully request that the anticipation and obviousness rejections over Joye be withdrawn.

Claim Rejections In View Of Forestiere et al.

Claims 1-3, 5-14, 18, and 19 stand rejected under 35 U.S.C. § 103(a) as being allegedly obvious over U.S. Patent No. 7,160,836 ("Forestiere et al."). Applicants respectfully disagree with this rejection; therefore, this rejection is respectfully traversed.

Forestiere et al. discloses materials comprising organic groups containing phosphorous bonded via covalent bonds to a mineral oxide and to another functional terminal group containing sulphur. The terminal group containing sulphur can be a polysulphide. Col. 1, lines 10-21. Such materials can be made by reacting at least one mineral oxide precursor with at least one phosphorous-containing compound of the following formula:



where the sum $m+n+p+q$ is equal to 3, $m=0, 1, \text{ or } 2$, $q=0, 1, \text{ or } 2$, $x=0 \text{ or } 1$, $p=0, 1, \text{ or } 2$, R is a hydrocarbon group, X is a hydrocarbon group with the formula SiR''_3 where R'' is a hydrocarbon group, Z is a hydrocarbon group optionally including heteroatoms, Cat^+ is a monovalent cation and A is a sulphur-containing group or a reactive group that can be transformed into a sulphur-containing group. Col. 2, lines 49-53 and col. 3, lines 1-19.

Applicants respectfully submit that Forestiere et al. does not disclose or suggest the compound of formula (I) of claim 1. In the Office Action, the Examiner states that the at least one phosphorous containing compound of Forestiere et al. reads on the compound of formula (I). Office Action at page 3. In the at least one phosphorous containing compound of Forestiere et al., the sulphur-containing group A is in the *terminal* position. In contrast, in the compound of formula (I), the sulphur containing group S_z is *not terminal*. Instead, it is sandwiched between two phosphorous compounds.

Moreover, Applicants respectfully submit that one of ordinary skill in the art at the time the invention was made would not have been motivated to make and isolate the at least one phosphorous containing compound in order to arrive at the claimed invention. The claimed compound of formula (I) is useful as a coupling agent between a polymer matrix and an inorganic or metal filler and as an elastomer. See Abstract and page 2, line 39-page 3, line 4. In contrast, Forestiere et al. is directed to materials applicable in catalysis and as adsorbent

or complexing agent. Col. 1, lines 14-21. Forestiere et al. does not address use of the materials for compatibilization or as elastomers. As a result, one of ordinary skill in the art at the time the invention was made would not have been motivated to consult Forestiere et al. and then make or isolate an *intermediate* compound in Forestiere et al.

For at least the above reasons, Applicants respectfully request that the obviousness rejection over Forestiere et al. be withdrawn.

Conclusion

For the reasons noted above, the art of record does not disclose or suggest the inventive concept of the present invention as defined by the claims.

In view of the foregoing amendments and remarks, reconsideration of the claims and allowance of the subject application is earnestly solicited. In the event that there are any questions relating to this application, it would be appreciated if the Examiner would telephone the undersigned attorney concerning such questions so that prosecution of this application may be expedited.

Respectfully submitted,

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